

Serial Number 10/064,683

Filed August 6, 2002

Group Art Unit: 1725

**In the claims:**

- 1.(Original) A wire comprising a sheath encapsulating a core having a core composition, the core composition comprising a combination of graphite and a compound of potassium, the combination of graphite and the compound of potassium in the core composition not exceeding approximately 5% by weight, the wire capable of being used in an alternating current welding process without destabilizing a welding arc.
- 2.(Original) The wire of Claim 1, wherein the compound of potassium is  $K_2MnTiO_4$ .
- 3.(Original) The wire of Claim 1, wherein the combination of graphite and the compound of potassium in the core composition is selected from the range of about 0.3% to about 5% by weight.
4. (Original) The wire of Claim 1, wherein the diameter of the wire does not exceed  $3/32"$ .
5. (Amended) The wire of Claim 4, wherein the alternating current does not exceed 1000A at and the amplitude of an electron negative cycle reaches about 850-900 A.
- 6.(Original) The wire of Claim 1, wherein the diameter of the wire is about  $5/32"$ .
- 7.(Amended) The wire of Claim 6, wherein the alternating current does not exceed 1750A at and the frequency is between 160Hz and 180 Hz.

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8.(Original) The wire of Claim 1, wherein the wire composition comprises

C	Mn	Si	Ni	P	S
0.06-0.07	1.1-1.28	0.5-0.65	1.0	0.011	0.011
0.06-0.07	1.1-1.35	0.5-0.70	1.0	0.011	0.010

9.(Original) The wire of Claim 8 having the tensile strength which does not exceed 90,000 psi.

10.(Original) The wire of Claim 1, wherein the core composition further comprises a percentage of Ni selected from the range from about 0%wt to about 4 %wt..

11.(Original) An alternating current welding apparatus comprising:

welding gun having means for feeding an electrode into the welding gun;  
the electrode comprising a sheath encapsulating a core having a core composition, the core composition comprising a combination of graphite and a compound of potassium, the combination of graphite and the compound of potassium in the core composition not exceeding approximately 5% by weight; and  
a power source supplying alternating electrical current to the electrode.

12.(Original) The alternating current welding apparatus of Claim 11, further comprising a gas source supplying a shielding gas to the welding apparatus.

13.(Original) The alternating current welding apparatus of Claim 11, wherein the welding process is gas metal arc welding.

14.(Original). The alternating current welding apparatus of Claim 11, wherein the means for feeding the electrode into the welding gun comprise a wire drive and a wire reel.

15.(Original) The alternating current welding apparatus of Claim 11, wherein the compound of potassium is  $K_2MnTiO_4$ .

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16.(Amended) The alternating current welding apparatus of Claim 15, wherein the combination is selected from the range from about 0.3% to about 5.0% by weight.

17.(Original) The alternating current welding apparatus of Claim 12, wherein the shielding gas comprises a mixture of Ar and CO<sub>2</sub>.

18.(Original) The alternating current welding apparatus of Claim 11, wherein the alternating current does not exceed 1000A at and the amplitude of an electron negative cycle reaches about 850-900 A.

19.(Original) The alternating current welding apparatus of Claim 11, wherein the diameter of the wire does not exceed about 5/32".

20.(Original) A alternating current welding process comprising:

providing an alternating current welding apparatus having means for feeding an electrode into the welding apparatus and means for supplying a shielding gas into the welding apparatus;

coupling the alternating current welding apparatus to an alternating current power source and forming an arc;

feeding the electrode into the alternating current welding apparatus, the electrode comprising a sheath and a core having a core composition, the core composition comprising a combination of graphite and a compound of potassium, the combination of graphite and the compound of potassium in the core composition not exceeding approximately 5% by weight; and

supplying the shielding gas into the alternating current welding apparatus to shield the electrode and the arc.

21.(Original) The welding process of Claim 20, wherein supplying the shielding gas into the alternating current welding apparatus comprises providing an external gas source.

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22.(Original) The welding process of Claim 20, wherein feeding the electrode into the alternating current welding apparatus comprises providing means for feeding the electrode that is external to the welding apparatus.

23.(Original) The welding process of Claim 20, wherein supplying the shielding gas comprises providing a mixture of Ar and CO<sub>2</sub>.

24.(Original) The welding process of Claim 20, wherein the welding process is a gas metal arc welding process.

25.(Original) The welding process of Claim 20, wherein the compound of potassium is K<sub>2</sub>MnTiO<sub>4</sub>.

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26.(Amended) The welding process of Claim 25, wherein the combination is selected from the range from about 0.3% to about 5.0% by weight.

27.(Original) The welding process of Claim 20, wherein the alternation current does not exceed 1000A and wherein the amplitude of an electrode negative part of the cycle reaches about 850-900A.

28.(Original) The welding process of Claim 20, wherein the electrode comprises a percentage of Ni selected from the range of about 0%wt to about 4%wt.

29.(Original) The welding process of Claim 20, wherein the electrode comprises up to 1%wt of Ni and exhibits a tensile strength of up to 90,000 psi.

30.(Original) The welding process of Claim 20, wherein the diameter of the electrode does not exceed 3/32".

31.(Original) The welding process of Claim 20, wherein the diameter of the wire does not exceed 5/32".